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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/661,429	09/13/2000	Simon Fafard	99388-US	8408

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EXAMINER
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NGUYEN, JOSEPH H

ART UNIT	PAPER NUMBER
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2815

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/661,429

Applicant(s)

FAFARD, SIMON

Examiner

Joseph Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 03 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 03 December 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of Osinski et al.

Regarding claim 1, Cook discloses on figure 2 substantially all the structure set forth in the claimed invention except said quantum structures being selected from the group consisting of quantum dots and quantum wires. However, Osinski et al discloses said quantum structures being selected from the group consisting of quantum dots and quantum wires (col. 9, lines 1-10). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cook by having said quantum structures being selected from the group consisting of quantum dots and quantum wires for the purpose of obtaining a high efficiency broad area semiconductor laser as taught by Osinski et al (col. 3, lines 50-52).

Regarding claims 2-4, Cook and Osinski et al together disclose all the structure set forth in claims 2-4.

Regarding claim 5, the claim limitation is merely product by process and therefore not given patentable weight.

Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook and Osinski et al as applied to claim 5 above, and further in view of Romano et al.

Regarding claim 6, Cook and Osinski et al disclose substantially all the structure set forth in the claimed invention except a wetting layer underneath the low dimensional structures. However, Romano et al discloses on figure 2 a wetting layer 220 underneath the low dimensional structures 250. In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Cook and Osinski et al by having a wetting layer underneath the low dimensional structures for the purpose of promoting smooth, uniform overage of the substrate as taught by Romano et al (col. 4, lines 36-40).

Regarding claim 7, the claim limitation is functional language and therefore not given patentable weight.

Claims 8-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook and Osinski et al and Romano et al as applied to claim 7 above, and further in view of Sugiyama.

Regarding claim 8, Cook and Osinski et al and Romano et al disclose substantially all the structures set forth in the claimed invention except intermediate layers between the active region and the electron and hole emitting layers. However, Sugiyama discloses intermediate layers between the active region and the electron and hole emitting layers (col. 5, lines 4-15). In view of such teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify

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Cook and Osinski et al and Romano et al by having intermediate layers between the active region and the electron and hole emitting layers for the purpose of improving the performance of a semiconductor laser.

Regarding claims 9-10, Cook and Osinski et al and Romano et al and Sugiyama disclose substantially all the structure set forth in the claimed invention except the laser diode consisting mainly of gallium, indium, aluminum, arsenic, nitrogen and phosphorous. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Cook and Osinski et al and Romano et al and Sugiyama by having the laser diode consisting mainly of gallium, indium, aluminum, arsenic, nitrogen and phosphorous for the purpose of improving the performance of a semiconductor laser diode, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claims 11-16, Cook and Osinski et al and Romano et al and Sugiyama disclose substantially all the structure set forth in the claimed invention except the graded compositions of electron and hole emitting layers, active region and barrier layers. However, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify Cook and Osinski et al and Romano et al and Sugiyama by having the graded compositions of electron and hole emitting layers, active region and barrier layers for the purpose of improving the performance of a semiconductor laser diode, since it has been held that discovering an optimum value

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of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 17-20, Cook and Osinski et al and Romano et al and Sugiyama disclose substantially all the structure set forth in the claimed invention.

### ***Response to Arguments***

Applicant's arguments filed on 12/3/2002 have been fully considered but they are not persuasive.

Applicant argues that there would be no motivation to change the quantum wells taught by Cook for the quantum dots included in Osinski. However, Osinski teaches that the end goal is to obtain a high efficiency, high power, and broad area semiconductor laser by using all elements and structures as disclosed by Osinski. Thus, there would be an improvement by combining Cook and Osinski. Also, Cook discloses that even with anti-reflection coating on the laser diode, the light emission peak is still at wavelength range of hundreds of nanometers (see figure 4). Therefore, Cook's laser diode emits light over a wavelength range of hundreds of nanometers as now recited in amended claim 1.

With respect to claim 5, the claim limitation is still product by process and therefore is not given any patentable weight as mentioned above in this Office Action.

With respect to claim 6, applicant argues that Romano does not teach a laser source is having a wavelength range extending over 100's nanometers. However, the only difference between claim 6 and Cook and Osinski et al is a wetting layer

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underneath the low dimensional structures, and Romano clearly discloses on figure 2 a wetting layer 220 underneath the low dimensional structures 250. With a strong motivation provided by Romano, the combination of Cook, Osinski and Romano would read on claim 6.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Nguyen whose telephone number is (703) 308-1269. The examiner can normally be reached on Monday-Friday, 7:30 am- 4:30 pm

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned is (703) 308-7382 for regular communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

JN  
February 6, 2003



**EDDIE LEE**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**